DOCUMENT RESUME

ED 406 501 UD 031 667

AUTHOR Stull, William J.
TITLE Is High School Economically Relevant for Noncollege Youth? Number 95-19.
INSTITUTION National Research Center on Education in the Inner Cities, Philadelphia, PA.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE 13 Sep 95
NOTE 30p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Apathy; *Economic Factors; Educational Attainment; Educational Policy; *High School Graduates; High Schools; *Income; Models; *Noncollege Bound Students; *Relevance (Education); Student Attitudes; Success
IDENTIFIERS High School and Beyond (NCES)

ABSTRACT

A rational apathy (RAP) model has been proposed that divides high school students into groups that face different sets of short-term rewards for school involvement. Students bound for competitive and less competitive colleges make up the first two groups, but those who do not intend to pursue higher education are the third group. The RAP model suggests that this reward structure guarantees widespread student apathy because for most students there are no immediate benefits from taking high school seriously. The RAP model was tested using data from the High School and Beyond survey for noncollege-bound youth. Following the description of the model, the second section of the report reviews earlier studies that found a link between high school experience and early wages. Section III presents the conceptual framework for the analysis, and Section IV describes the data and variables. Section V discusses estimation issues, and Section VI presents main results. Policy implications are discussed in Section VII. It is concluded that neither skills nor credentials acquired in high school have an important influence on the wages that noncollege youth earn a few years after leaving school. In economic terms, high school is not highly relevant to the early economic success of noncollege bound students. An appendix reviews study data. (Contains 2 tables and 32 references.) (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 406 501

Is High School Economically Relevant for Noncollege Youth?

by William J. Stull

The National Center on Education in the Inner Cities

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

UD031667

Temple University Center for Research in Human Development and Education

Is High School Economically Relevant for Noncollege Youth?

by William J. Stull

The National Center on
Education in the Inner Cities

The research reported herein was supported in part by the Office of Educational Research and Improvement (OERI) of the U.S. Department of Education through a grant to the National Center on Education in the Inner Cities (CEIC) at the Temple University Center for Research in Human Development and Education (CRHDE). The opinions expressed do not necessarily reflect the position of the supporting agencies, and no official endorsement should be inferred.

 # 95-19

UD031667

Is High School Economically Relevant for Noncollege Youth?

by

William J. Stull*

Department of Economics
and
Center for Research in Human Development and Education
Temple University
Philadelphia, PA 19122

September 13, 1995

* I wish to thank the Center for Research in Human Development and Education at Temple University and the Federal Reserve Bank of Philadelphia for financial support. Stephen Joyce provided excellent research assistance and is the author of the appendix. Leo Rigsby, Margaret Wang, Michael Leeds, William Yancey, and Judith Stull made useful comments on earlier drafts. Judith Stull, Jing Zhang, Michael Leeds, and Eugene Mayro provided valuable computational assistance.

I. Introduction

A substantial ethnographic literature emerged during the 1980s documenting the problems and prospects of American secondary education.[1] Most studies in this literature examine a small number of high schools in depth and base their findings on interviews with principals, teachers, and students and on direct observation of school activities. Despite differences in purpose and scope, these works all conclude that the quality of the education delivered by the typical American high school is quite low. Perhaps the most prominent element in the depressing picture painted by this research is the apathy displayed by most students in the study schools. This manifests itself in a variety of ways. For some young people it causes physical withdrawal in the form of chronic lateness, disruption, truancy, or dropping-out. For others, perhaps the majority, its only symptom is mental disengagement. Such students obey the rules and attend class regularly but put no effort into their studies.

Various explanations have been proposed to explain why U.S. secondary students are so little involved in their schooling. Some researchers (Grant, 1988; Clark, 1985) emphasize structural factors such as the fragmented mission of secondary education, local control of public high schools, low levels of respect for adult authority, and the emergence of a consumption-oriented youth culture. Others such as Bishop (1989) and Owen (1995) take a more individualistic perspective and argue that apathy is a rational response to the circumstances in which most students find themselves. The research reported here builds on the ideas advanced by this second group and presents some empirical evidence in support of them.

Broadly speaking, what I call the rational apathy (RAP) model divides high school students into three groups, each of which is assumed to face a different set of short-term rewards for school involvement. The first, and smallest, group consists of students aspiring to attend competitive institutions of higher learning. Most of these work hard in their classes because academic success is necessary for the attainment of their educational objectives. They also obey school rules and participate actively in the extracurriculum for the same reason. The second group is made up of students who plan to attend noncompetitive colleges and universities. The members of this group are engaged to some degree in the academic and nonacademic life of their schools, but the level of involvement often isn't high since good grades, a difficult curriculum, and extracurricular activities are not necessary to gain admittance to most postsecondary educational institutions. The last, and largest, group consists of students who do not intend to pursue any form of higher education.[2] These youth are only minimally engaged in their schooling because graduation requirements are low and their school record will have no effect on their early job prospects. The main conclusion of the RAP model is that this reward structure guarantees widespread apathy because for most students there are no immediate benefits to be gained from taking high school seriously.

The purpose of this paper is to present results from a test of the model for the third group of students described above using data from the High School and Beyond (HS&B) panel study. The research methodology is straightforward. Noncollege youth enter the postsecondary labor market with various academic and nonacademic skills which they acquired (or enhanced) in high school. They may also have acquired certain school credentials that may or may not indicate skill attainment. If at least some of these skills or credentials are relevant to employers and thus provide the basis for hiring and promotion decisions, individuals who possess them will earn higher wages than those who do not. One can therefore test the RAP model by regressing early wages earned by noncollege youth on a set of independent variables which include among them a wide range of indicators measuring the acquisition of skills and credentials in high school. If only a few of the school coefficients are statistically significant, have the proper sign, and are nontrivial in magnitude, the model is supported as a reasonable explanation for widespread student apathy in high school. If, on the other hand, many school coefficients have these characteristics, the model can be rejected.

The remainder of the paper is divided into seven sections. Section II reviews the findings of earlier studies that investigate the link between high school experience and early wages and provides a rationale for the research reported here. Section III presents the conceptual framework for the analysis, Section IV describes the data and variables, and Section V discusses estimation issues. The main results are presented in Section VI. The last section, Section VII, briefly discusses their policy implications.

To preview the main result, I conclude that neither skills nor credentials acquired in high school have an important influence on the wages that noncollege youth earn a few years after leaving school. My answer, therefore, to the question posed in the paper's title is no. High school is not relevant to the early economic success of these students. Their apathy in the face of its academic and nonacademic imperatives is thus best understood as a rational response to an education system which, for them, is disconnected from the world of work.

II. Earlier Studies

Before discussing methodology and results, it is useful to provide a rationale for the research in terms of the empirical literature on the determinants of early labor market success for noncollege youth. If high school is economically relevant for these young people, it must be because it teaches or enhances skills that are valuable to employers There are a variety of labor market success measures that may indicate the presence of such skills. The most important are hourly wages, earnings (wages times hours), and employment status (employed full-time, employed part-time, unemployed, out of the labor market). Economic theory and common sense tell us that the wage a person earns is directly related to the skills he possesses. Earnings and employment status, on the other hand, are only indirectly related to skills because of the presence of an intervening variable, work hours, which may or may not be skill determined. This study uses the

wage as its dependent variable mainly because of its direct relationship to skills but also because modeling the determinants of hours worked would unnecessarily complicate the analysis.

A 1993 survey article by Johnson and Summers identifies 17 studies of postsecondary labor market performance of noncollege workers that use school indicators as independent variables and also meet certain technical criteria. These include the use of multivariate statistical techniques, large sample size, and an adequate number of control variables. Several of the studies use the HS&B dataset (Benson et al., 1991; Bishop et al., 1985; Bishop, 1985). Summary tables in the article report the number of statistically significant findings across the 17 studies for the most commonly used school variables. Eleven of the studies use measures of student school experience and achievement in their analyses. Slightly less than one-third of the estimated coefficients associated with these measures are statistically significant and have the proper sign. Eleven of the studies (not necessarily the same ones) use measures of school quality as independent variables. Here approximately one-half the coefficients are significant and have the proper sign. Overall, these results suggest that there is a connection between secondary schooling and early success in the labor market since there are more significant coefficients for both groups of variables than would be expected if all relevant null hypotheses were true. The findings of several very recent papers that have appeared since the Johnson and Summers survey was completed are consistent with this conclusion (Crawford et al., 1994; Murnane et al., 1995; Betts, 1995).

Taken in its entirety, the current literature thus seems to provide some support for the proposition that high school experience has an impact on the early labor market success of noncollege youth. This in turn suggests that the RAP model, at least insofar as it applies to this group, is incorrect. There are, however, several reasons for not accepting this conclusion, most of which are consequences of the fact that none of the existing studies are structured so as to provide a definitive test of the model.

First, many studies use datasets that include adults as well as youth. It is quite possible that high school experience influences labor market success for noncollege individuals in the long run but not the short. Murnane et al. (1995), for example, find that math skills are a more important wage determinant six years after high school than two years after. If such delayed effects are the rule rather than the exception (Bishop, 1985), secondary school and schooling might be "relevant" for noncollege individuals once they achieve adulthood but not earlier. Given the short time horizon of many high school students (particularly those who do not plan to attend college), the finding of long term effects does not represent a refutation of the RAP model.

Second, only about half the studies in the survey use hourly wages as a dependent variable. The rest use earnings, employment status, work hours, or other measures. As discussed above, nonwage measures are imperfect indicators of skills possession, and therefore positive findings from studies using them do not necessarily show that students acquire market relevant knowledge or attitudes in school. A young person with a strong

work ethic, for example, may put long hours into both his course work (and thus earn good grades) and his postsecondary employment (and thus have high earnings) without necessarily having learned anything from the former that raises his wage.

Third, and most important, no study takes a comprehensive approach to the measurement of school effects. Some include independent variables describing school characteristics but not the school experience of the student (Betts, 1995; Card and Krueger, 1992). Others do the reverse (Bishop et al., 1985; Bishop, 1985). Further, among those that include indicators of school experience, most use only academic measures such as curriculum, grades, or test scores, ignoring the nonacademic side of high school (Murnane et al., 1995; Meyer and Wise, 1982). Many of these (but not all) find no relationship between academic experience and early labor market success. Finally, the small number of studies that attempt to measure nonacademic effects typically use only a few variables to do so (Rosenbaum and Kariya, 1991). A proper test of the RAP model must take account of the possibility that both the school itself and the student's experiences in the school, academic and nonacademic, add to work skills and, further, that such effects may be multidimensional. Such a test must also include an assessment of the substantive as well as statistical significance of the estimated coefficients for the school variables, something not always done in the literature.

These problems suggest that the published research results, which seem to contradict the hypothesis of rational apathy, are not as strong as they first appear. Given this ambiguity and the importance of the student apathy problem, there is a need for a study whose specific objective is a test of the RAP model. This paper fills that gap in the literature.

III. **Conceptual Framework**

Unlike many empirical analyses of youth labor market success, the research reported here is based on a fairly clear conception of how wage differentials are generated. Section III presents this framework, which is then used in later sections to guide model specification and the interpretation of results. Described below are the key analytical assumptions and also the taxonomy of wage determinants used to select independent variables for the estimation.

Assumptions

This study is based on the proposition that the representative youth labor market is fundamentally perfectly competitive but with important imperfections. The main features of this market are as follows. First, there are numerous buyers and sellers so no agents exercise monopoly or monopsony power. Second, there is free entry and exit. Third, workers and firms are heterogeneous. Workers differ in skill and motivation; they also have different personal characteristics, possess different values, and come from different backgrounds. Firms differ as well. Among other things, they produce different products

and have different hiring and promotion policies. Fourth, youth labor markets are characterized by limited information and access. Young workers lack complete knowledge about job opportunities and about their ability to take advantage of opportunities they do know about. In addition, they may not have full access to known opportunities because of where they live or their family background. Youth employers face related obstacles.

A labor market with these characteristics can be thought of as a socioeconomic island group or archipelago where each island represents a submarket and where the submarkets are differentiated primarily on the basis of job type and geography. Young people leaving school search among the submarkets to which they have access and seek admittance to the most desirable. Employers choose among applicants (who may include existing employees in lower level positions) using criteria that are partly profit-maximizing, partly discriminatory, and partly random. Youth with the highest skills, the most accessibility to submarkets, the least likelihood of being discriminated against, and the greatest motivation tend to receive the highest wages. Youth lacking one or more of these advantages earn less. One implication of this market structure, therefore, is the existence of wage differentials. Another is a significant degree of randomness in the assignment of workers to jobs. This is the result of worker and firm heterogeneity and of limitations on information and access.

Causes of Youth Wage Differentials

This study focuses on noncollege youth who have gainful employment at the moment of observation. In general, there are five groups of systematic factors that can affect the wage that a young person earns. Some of these represent skills, both academic and nonacademic; others represent nonskill factors.

Academic skills include both proficiency in the "three Rs" and knowledge of specific subject areas such as history or science. For most young people, academic skills are acquired primarily in school. Nonacademic skills include general and specific job skills. General job skills are the nonacademic behaviors and attitudes required in nearly all work situations. They include punctuality, honesty, respect for authority, willingness to work, leadership, and the ability to get along with others. In part, these skills are acquired or enhanced in school, but they are also learned in the home, on the job, or in a training program. A number of researchers have hypothesized that these skills may be more important than academic knowledge in explaining differences in the early labor market success of noncollege youth (Krueger, 1993; William T. Grant Foundation, 1988). Specific job skills are nonacademic skills that are required for only a narrow range of occupations. These include office skills such as keyboarding, personal service skills such as hairdressing, and production skills such as welding or carpentry. These may be learned in school (perhaps through vocational education classes), but are probably more typically acquired as a result of formal or informal training outside the educational sector

Not all wage differentials are explained by skill differences. Two equally skilled individuals can earn different wages because of factors that have nothing to do with their productivity on the job. In an archipelago market some workers earn higher wages because of better information, access, or motivation. The first two of these could result from differences in residential location, social networks, or the likelihood of being discriminated against. Some individuals are also more motivated than others to search for high-paying jobs. Holding skills constant, workers with these advantages earn higher wages than those without them. In addition, the general wage level varies from one archipelago to another across the country. In a national sample, therefore, wages differ in part because of local labor market conditions.

IV. Data and Variables

As noted earlier, the data for the research reported here is taken from the HS&B panel study. This section provides a brief overview of the study and describes the particular subsample of HS&B respondents used in the analysis. It also discusses the specific variables included in the estimation. More details are provided in the appendix.

Data

The HS&B study is one of three large national data collection efforts carried out over the past twenty-five years by the National Center for Educational Statistics focusing on the secondary and postsecondary experiences of high school students.[3] It consists of five surveys administered to two national samples of young people, one made up of students who were high school sophomores in 1980 and the other of students who were seniors. Participants were selected using a two stage process in which a stratified national probability sample of 1,100 public and private high schools was chosen first and then individual students were selected randomly from each school. The base year surveys for both the sophomore and senior cohorts were conducted in the spring of 1980 and follow-up surveys in the spring of 1982, 1984, 1986, and 1992. The base year and first follow-up surveys contained a variety of instruments including a student questionnaire, various cognitive tests for students, a school questionnaire, a teacher comment checklist, and a parent questionnaire. Subsequent surveys for the most part contained only a student questionnaire. Survey information in certain years was supplemented by data on local labor market conditions and from student transcripts. Additional information about HS&B may be found in Sebring et al. (1987).

The research reported here is based on data from the first four HS&B surveys for the sophomore cohort. Approximately 15,000 students were selected for these surveys, of which 11,683 actually participated in all four. This study uses a subset of the latter group. There were three main criteria for inclusion. First, the individuals had to be working for pay at the time of the second follow-up (spring 1984). This was two years after high school graduation assuming normal educational progress. Second, they could not be in school or the armed forces at the moment of observation. Individuals who were working

while attending college were therefore excluded. Third, reasonable wage data from the HS&B survey had to be available. In combination, these restrictions reduced the number of respondents available for study from 11,683 to 3,359, of which 85% are high school graduates and 15% dropouts.

Dependent Variable

The dependent variable is the wage earned by a young person at the job he was holding at the time of the second follow-up.[4] The small number of individuals who earned unusually high or low wages (i.e., more than $15 or less than $1 per hour) were excluded from the analysis. Table 1 shows the distribution of hourly wages for the 3,359 youth in the sample. It has the conventional shape with a fairly low median value ($4.45 per hour), but with an extended right hand tail. Almost 80% of the sample youth earned between $2 and $6 per hour. Males on the average earned about 17% more than females (not shown). Additional information about the construction of the wage series is provided in the Appendix.

Conceptually, two things should be noted about the wage variable used here. First, it does not necessarily represent a first job wage. By the time of the second follow-up most of the respondents in the study sample had had more than one job. Second, it also does not necessarily represent an entry wage. A majority of the respondents had held their jobs for a year or more and therefore are likely to have received raises or promotions. These facts mean that the wages used in the analysis are likely to be good measures of market productivity. Youth in the sample had had the opportunity to move from jobs for which they were not suited to jobs for which they were. They also had worked long enough with their current employers to demonstrate their worth and be paid accordingly.

Independent Variables

It is convenient to divide the independent variables into two broad groups: school variables and nonschool variables. The latter are further subdivided into work experience/training variables, control variables, and local labor market condition variables.

* School Variables

The central issue addressed by this study is whether skills learned or enhanced in high school by noncollege youth have early market value in the sense that employers are willing to pay higher wages to those who possess them. A wide variety of school variables are included in the analysis to assess the overall strength of these effects

To capture the academic skills acquired by students, I use their high school grade point average (GRADES), their knowledge of various academic disciplines as measured by HS&B test scores (CIVICSTEST, ENGLISHTEST, MATHTEST, SCIENCETEST), and a dummy variable indicating whether they graduated (DIPLOMA). To capture the acquisition of specific job skills in school, I include two dummy variables indicating

curriculum (GENERAL, VOCATIONAL, default = ACADEMIC) and another indicating exposure to computers (COMPUTERUSE).

In addition to learning academic and specific job skills, students acquire (or at least have an opportunity to practice) general job skills in high school. I capture these using two sets of variables. The first set is concerned with deportment. Included here are variables measuring the number of times during the previous semester a student was absent or late (ABSENTLATE) and the number of times he came to class unprepared (UNPREPARED). Included also are the average number of hours per week devoted to homework (HOMEWORKHRS) and a dummy variable indicating whether a student was ever suspended (SUSPENDED). The second set of variables measures participation in the extracurriculum. Students may acquire interpersonal and organizational skills through involvement in nonacademic activities in high school. I measure this involvement using three variables: an index of overall participation in extracurricular activities other than athletics (OTHERACTIVITIES), a dummy variable indicating participation in intramural or interscholastic sports (ATHLETICS), and an index showing the extent to which a student functioned as a leader in a variety of settings (LEADERSHIP).

Finally, several school characteristics are included in the model. Holding skill acquisition (narrowly defined) constant, it is possible that certain kinds of schools provide more motivation, information, or job access than others. It is also possible that schools differ in the provision of skills in ways not completely captured by the skill variables included elsewhere. To account for these possibilities I use dummy variables for sector (CATHOLIC, OTHERPRIVATE, default = PUBLIC). I also include linear and quadratic terms for school size (SIZE, SIZESQUARED) and two continuous variables describing the academic achievement of the student body: percentage of students who go on to college (COLLEGEPERCENT) and percentage who dropout (DROPOUTPERCENT)

*Nonschool Variables

Young people acquire general and specific job skills outside of school in part from work experience and training programs. This study captures skill acquisition through work experience using three variables: the average number of hours worked per week during high school (AFTSCHOOLWORK), a dummy variable indicating whether a respondent ever held a full-time job (FULLTIMEWORK), and an index of average hours worked per week in the two years prior to the second follow-up (WORKHISTORY). The extent of postsecondary training is measured using a dummy variable indicating whether a young person participated in a training program (TRAINPROG) and by a continuous variable showing the number of employment-relevant certificates and licenses earned (CERTIFICATES).

The control variables for the most part describe the personal and family characteristics of the respondents. They are included for two reasons. First, as noted above, two equally skilled individuals in the same labor market could earn different wages because of differences in information, job access, motivation, or the likelihood of being

discriminated against. Control variables to some degree "explain" such differences. Second, these variables also serve as proxies for skills that are innate to the individual or acquired outside of school or work settings.

Family background is captured using a composite index of parents' socioeconomic status (SES) based on mother's education, father's education, father's occupation, family income, and household possessions. Marital status is represented by a single dummy variable (MARRIED) in single sex equations and by three dummy variables (MARRIEDFEM, MARRIEDMALE, UNMARRIEDFEM, default = UNMARRIEDMALE) when the genders are pooled. Parent status is represented by a continuous variable indicating the number of children (CHILD). The race of the individual is captured using four dummy variables (BLACK, HISPANIC, ASIAN, NATIVEAMER, default = WHITE). Some researchers have argued that physical appearance affects labor market success (Hamermesh and Biddle, 1994). To control for this influence, I include two dummy variables. The first indicates whether a respondent believes himself to be overweight (OVERWEIGHT) and the second whether he believes that others find him unattractive (UNATTRACTIVE). Three psychological indices are included to capture personality differences that might have implications for wage determination. The first measures locus of control (LOCUSCONTROL), the extent to which an individual has a sense of personal efficacy; the second measures self concept (SELFCONCEPT), the extent to which an individual has a sense of personal worthiness; the third measures work orientation (WORKORIENT), the extent to which an individual sees work as an important element in his life. Finally, I include as controls a dummy variable indicating whether a respondent has an employment-relevant handicap (HANDICAP) and a dummy variable indicating whether he has ever been in trouble with the law (LAWTROUBLE).

Local labor market conditions are represented using two continuous variables measuring actual conditions and a set of dummy variables indicating region and subregion. The continuous variables are the SMSA average manufacturing wage (MANUWAGE) and the county unemployment rate (UNEMPLOYRATE). The dummy variables include eight indicating Census division (NEW ENGLAND, MIDATLANTIC, SOUTHATLANTIC, ENCENTRAL, ESCENTRAL, WNCENTRAL, WSCENTRAL, MOUNTAIN, default = PACIFIC) and two indicating community type within a region (RURAL, URBAN, default = SUBURBAN).

V. Estimation Issues

Two estimation issues emerged in the course of the research that require some discussion: weighting and sample selection. Because of the oversampling of particular types of schools (e.g., those with high Hispanic enrollment), the HS&B sophomore cohort is not representative of the national population of high school sophomores in 1980. To allow researchers to correct for this, the dataset provides several alternative sets of weights, each appropriate for use with a different HS&B subsample (Sebring et al., 1987). For the regressions reported in the next section, I used the weights for the subsample of

respondents who participated in all of the first four HS&B surveys. Experimentation with unweighted regressions revealed that weighting has no effect on the main conclusions of the study.

The second issue warrants more attention. Sample selection problems may arise in econometric work when the data points used in an estimation are the products of a choice mechanism that does not operate independently of the stochastic process generating the observations on the dependent variable. Failure to take this interdependence into account can lead to biased coefficient estimates.

The population of interest in this study consists of young people in the U.S. who were high school sophomores in 1980 and who were neither working nor in the military in 1984. The purpose of the research is to determine the effect of high school experience on earning capacity (as measured by the hourly wage) independent of whether a young person chooses to work. To a first approximation, the HS&B dataset provides (after appropriate weighting) a random sample from this population. For the purposes of estimating a wage equation, the ideal situation would be one in which all the respondents in the sample are working, and therefore have a current wage rate, at the moment of observation. In the HS&B data, however, this is far from the case. In the spring of 1984 over 2000 members of the sophomore cohort were neither in school or the military nor working at a job for pay. Furthermore, the nonworking group differed somewhat from the working group along a variety of dimensions (gender proportions, for example). These facts raise the possibility that population estimates generated by a regression based on observations for the working group only will differ systematically from those that would be obtained using a (hypothetical) dataset in which all individuals were employed.

The standard model of sample selection bias in this setting consists of two equations. The first is the wage equation for the population in question. The second is the sample selection equation, the relationship that determines whether a respondent drawn from the population is working. The dependent variable in the selection equation is an unobserved index of the propensity to work. An individual works if and only if this index is positive. The error terms in the equations are assumed to follow a bivariate normal distribution. Since formal descriptions of various versions of this model are common in the literature (Maddala, 1983; Greene, 1993), I will confine my discussion to an informal statement of its properties.

Two conditions are needed to generate selection bias in this model. The first is that the error terms in the two equations are correlated. This means that some of the excluded factors affecting wages also affect the propensity to work.. The second condition is that at least some of the variables in the wage equation also appear in the propensity to work equation. A priori, both seem reasonable since one of the most important influences on the propensity to work is the wage itself. Assuming the two conditions hold, it can be shown that the coefficient estimators from a wage equation estimated using OLS for the working group alone are biased because there is a missing variable in the model, the inverse Mills ratio, which is correlated with the included

independent variables. This variable emerges out of the conditional expectation computation for the wage rate given that the respondent is working. Since specification error bias does not disappear as sample size gets larger, the OLS estimators are inconsistent as well.

The most widely used method for obtaining consistent estimates in models of this type is a two step procedure developed by Heckman (1979). The first step involves estimating a probit version of the propensity to work equation using data on all the respondents in the sample. The results from this estimation are then used to compute a fitted Mills ratio for every respondent in the working subsample. The second step consists of regressing the wage rate on the regular independent variables and the fitted Mills ratio using OLS.

In this study, Heckman's procedure was used to estimate a variety of preliminary wage equations under the assumption that the independent variables in the wage and propensity to work relationships are the same. The results indicated that sample selection is not an important problem in the HS&B data. The estimated coefficients for the fitted Mills ratios were always statistically insignificant, and except in a few cases the coefficient estimates for the other independent variables were nearly identical to comparable OLS estimates in value and statistical significance. One possible explanation for the absence of selection problems is that there are few common excluded factors in the wage and work propensity error terms because of the large number of independent variables, causing the correlation between the errors to be low. Because the Heckman estimates added no new information, they have been excluded to keep the presentation as simple as possible. (They are available from the author on request, however.) The final wage equations reported below were obtained using weighted OLS.

VI. **Results**

The main statistical results are shown in Table 2. The first column reports the estimated coefficients and t ratios for a regression in which male and female respondents are combined; the second and third columns show them for single sex regressions. These results were obtained using a two stage process. First the wage was regressed on all 55 variables described in Section IV (52 variables in the case of the gender specific equations). Then variables with significance levels less than .10 were dropped and the equations reestimated. The results of this second estimation are reported in the table.

The fit of these relationships as measured by R^2 is low, but typical of wage equations estimated using HS&B data (see, for example, Krueger, 1993). I attribute the large amount of unexplained variation to two factors. The first is measurement error in the wage variable. Information about compensation was not collected in a straightforward manner in HS&B so the likelihood of response errors is fairly high (see Appendix for more details). The second factor is the large amount of randomness that is always present in the

youth labor market. As discussed earlier, this is the result of limited information and access on both sides of the market.

* Nonschool Variables

Since the effects of the nonschool variables on wages are incidental to the main point of the paper, I will examine them first and in not much detail. The discussion follows the order of the variables in Table 2.

I find, as other studies do, that work experience and job training enhance youth wages (Meyer and Wise, 1982; Lynch, 1992; Ruhm, 1994). Young people who work during high school earn higher postsecondary wages than those who do not. In addition, those who work many hours per week after leaving school earn higher wages subsequently than those who work only a few hours. Finally, youth who participate in job training programs earn more than nonparticipants (though the number of certificates received has no independent influence). The experience and training effects are similar for males and females, except that the female effects are consistently smaller.

The control variables present a mixed picture. Family socioeconomic status, gender, marital status, parent status, and handicap status all exert a statistically significant influence on wages. In general, youth from high SES backgrounds earn more than youth from low SES backgrounds; males earn more than females, married persons earn more than single persons, parents earn less than nonparents, and those with handicaps earn less than those without them. The most dramatic result is the large difference in wages between married and unmarried men -- approximately $.70 per hour.

The remaining control variables generally have no effect on youth wages in the HS&B sample. Race, physical appearance, and personality characteristics are consistently insignificant across all three equations except for the locus of control index, which is significant in the combined and male equations but with a negative coefficient. The dummy variable indicating trouble with the law is also insignificant. This finding is broadly consistent with the recent results of Grogger (1995), who concludes that being arrested or going to jail has only weak effects on the subsequent earnings of young men.

Finally, the estimated coefficients for the local labor market condition variables indicate that these are important determinants of youth wage levels. Both the regional unemployment rate and the level of manufacturing wages are statistically significant in the combined and male equations. In addition, most of the regional dummy variables are significant in all three equations, often with large coefficients. Only the variables indicating community type are consistently insignificant.

* School Variables

The coefficients for the school variables in Table 2 provide the basis for the main conclusions of the study. Most researchers doing empirical work on youth wage

determination are concerned only with a small subset of their independent variables and often only those that are statistically significant. In contrast, I want to focus on all 22 school variables as a group with particular attention paid to those that are insignificant. I believe the results for these variables taken together indicate that high school experience has no meaningful influence on early postsecondary wages of noncollege youth. I make four arguments in support of this contention.

The first pertains to the number of significant coefficients in the second half of Table 2. There are 66 possible school "effects" that could be captured by the empirical model (22 variables times 3 equations). Of these, only 14 are significant at the .10 level, 12 at the .05 level. This is more than would be expected from random drawings from the t distribution, but the difference is not impressive. Note that grades, curriculum, computer use, and diploma status do not affect early wages.

Second, among the statistically significant variables several have the "wrong" sign. In particular, doing well on the English skills exams appears to lower wages in the combined equation while frequent absence and lateness appears to raise wages. These results make little sense. In addition, the school size coefficients in the female equation indicate either that "bigger is better" (ignoring the statistically insignificant squared term) or that the optimal size school has 2300 students, more than twice the median in the HS&B sample (including the squared term). Both interpretations are inconsistent with current research that suggests that small schools do a better job of educating their pupils than large ones (Oxley, 1994).

Third, no school variable that is statistically significant in the male equation is also significant in the female equation and vice versa, suggesting that the school effects associated with these variables are not particularly strong. This pattern could be explained by gender segmentation in the labor market. However, preliminary calculations using the HS&B data (not reported here) indicate substantial overlap in the occupations held by males and females. Also, many nonschool variables are significant in both the male and female equations.

Finally, several of the school coefficients that are statistically significant and have the proper sign are so small in magnitude that it is difficult to imagine that the effects they represent would capture the attention of the typical noncollege high school student. Consider, for example, the MATHTEST results. A student in the 50th percentile of the combined sample answered 17 of 38 questions correctly while a student in the 75th percentile answered 23 of 38 correctly. Using the MATHTEST coefficient from the combined equation in Table 2, the monetary reward for this quartile improvement is $ 09 per hour. Put another way, a 35% increase in mathematics competency at the median level of performance produces a 2% increase in the wage rate. A comparable computation for males only shows that a 44% increase in competency at the median produces a 4% increase in the wage rate. Parallel calculations using the SCIENCETEST and HOMEWORKHRS coefficients in the combined equation yield similar elasticities. An 18% increase in science knowledge at the median causes the wage to increase slightly

more than 1% (about $.05 per hour), as does a 100% increase in weekly hours of homework at the median (from 2 hours to 4 hours!).

The only school effects of any importance in Table 2 are participation in athletics (primarily for males) and attendance at a Catholic school (primarily for females). For males, participating in athletics adds $.25 to hourly wages, while attending a Catholic school adds $.52 for females. A difficulty with even these results is that they may be biased upward because of sample selection problems. Certain unmeasured personal or family characteristics may, for example, increase both the likelihood that a female student will attend a Catholic school and the probability she will earn a high wage, without the school itself contributing anything to her productivity. (For further discussion of this issue see Sander and Krautmann, 1995.)

VII. Discussion and Policy Implications

Overall, the preceding results indicate quite clearly that what noncollege students do or don't do in high school has little impact on the wages they will earn in their early years in the labor market. Given that these young people often have a relatively short time horizon and also that they attach a high value to leisure, it is quite rational for them to pass through high school paying a minimum of attention to its academic and nonacademic requirements. The RAP model thus appears to provide a powerful explanation for the widespread student apathy observed among American secondary students.

What policy recommendations, if any, flow from these findings? One approach to intervention focuses on the institutional disconnection between the world of school and the world of work. It is now well known that employers in the United States make little use of high school performance information in hiring and promoting young people (Rosenbaum and Kariya, 1991). There is some disagreement as to the causes of this phenomenon, however. Are schools to blame because they don't make transcripts and other student records readily available to employers? Or are employers to blame for not requesting these data? At the moment we do not know the answers to these questions. If fault lies primarily with the schools, it is easy to imagine policies that would substantially reduce the cost to organizations of acquiring school information about prospective employees. If, however, employers attach no value to this information, such policies will fail. One obvious policy recommendation, therefore, is that schools experiment with alternative methods of providing student information to prospective employers quickly and cheaply. If this information is valuable, firms will use it to make early hiring and promotion decisions, in which case apathy in high school will no longer be economically rational.

Unfortunately, however, the results of this paper suggest that such experiments will not be successful. Recall that the wage variable used in the regressions is neither a first job wage nor an entry wage for most of the young people in the sample. The wage thus represents to a significant degree realized job productivity for an individual with some

work experience as observed by supervisors rather than anticipated productivity for an inexperienced worker as predicted by personnel departments. The fact that school variables are not significant in explaining this wage suggests strongly that what students learn in high school both inside and outside the classroom does not add to their value as employees early in their working careers. If this is the fundamental truth about youth labor markets as they are currently structured, curing the student apathy problem will be much more difficult.

Notes

1. Most of the studies making up this literature were published in book form. Among the best known are Cusik (1983), Grant (1988), Hampel (1986), Powell et al. (1985), and Sizer (1985). The Hampel, Powell et al., and Sizer volumes were written as part of "A Study of High Schools," a project sponsored by the National Association of Secondary School Principals and the National Association of Independent Schools. Lazerson (1986) provides a useful overview.

2. A recent RAND study shows that in the 1980s only about 50% of American youth entered a college or university within six years after leaving high school (Haggstrom, et al., 1991)

3. The other two are the National Longitudinal Study of the High School Class of 1972 and the National Education Longitudinal Study of 1988. I chose to work with HS&B because it provides the most recent data on the postsecondary work experience of high school students.

4. In cases where the respondent had more than one job, an average wage was computed. Regressions were also run using the natural logarithm of the wage. The results of these estimations were essentially the same as those reported here.

Bibliography

Benson, Charles; Ibser, Maya; and Klein, Steven. "Economic Returns to Vocational Education and Other Types of Occupational Training," Working Paper, Department of Economics, University of California, Berkeley, 1991.

Betts, Julian. "Does School Quality Matter? Evidence from the National Longitudinal Survey of Youth," *The Review of Economics and Statistics*, Vol. 77, No. 2, May 1995, pp. 231-250.

Bishop, John. "Preparing Youth for Employment," Working Paper, National Center for Research in Vocational Education, Ohio State University, 1985.

Bishop, John. "Why the Apathy in American High Schools?" *Educational Researcher*, Vol. 18, No. 1, January/February 1989, pp. 6-10.

Bishop, John; Blakemore, Arthur; and Low, Stuart. "High School Graduates in the Labor Market: A Comparison of the Class of 1972 and 1980," Working Paper, National Center for Research in Vocational Education, Ohio State University, 1985.

Card, David and Krueger, Alan. "Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States," *Journal of Political Economy*, Vol. 100, No. 1, February 1992, pp. 1-40.

Clark, Burton. "The American High School and the University: What Went Wrong, Parts 1 and 2," *Phi Delta Kappan*, Vol. 66, Nos. 6/7, February/March 1985, pp. 391-397, 472-475.

Crawford, David; Johnson, Amy; and Summers, Anita. "Schools and Labor Market Outcomes," Working Paper, National Center on the Educational Quality of the Workforce, University of Pennsylvania, 1994.

Cusik, Philip. *The Egalitarian Ideal and the American High School* (New York: Longman, 1983).

Grant, Gerald. *The World We Created at Hamilton High* (Cambridge, MA: Harvard University Press, 1988).

Greene, William. *Econometric Analysis*, 2nd ed. (New York: Macmillan, 1993)

Grogger, Jeffrey. "The Effect of Arrests on the Employment and Earnings of Young Men," *Quarterly Journal of Economics*, Vol. 110, No. 1, February 1995, pp 51-71

Haggstrom, Gus; Blaschke, Thomas; and Shavelson, Richard. *After High School, Then What? A Look at the Sorting-Out Process for American Youth* (Santa Monica: RAND, 1991).

Hamermesh, Daniel and Biddle, Jeff. "Beauty and the Labor Market," *American Economic Review*, Vol. 84, No. 5, December, 1994, pp. 1174-1194.

Hampel, Robert. *The Last Little Citadel: American High Schools since 1940* (Boston: Houghton Mifflin, 1986).

Heckman, James. "Sample Selection Bias as a Specification Error," *Econometrica*, Vol. 47, No. 1, January 1979, pp. 153-161.

Johnson, Amy and Summers, Anita. "What Do We Know About How Schools Affect the Labor Force Performance of Their Students?" Working Paper, National Center on the Educational Quality of the Workforce, University of Pennsylvania, Philadelphia, PA, 1993.

Krueger, Alan. "How Computers Have Changed the Wage Structure: Evidence from Microdata, 1984-1989," *The Quarterly Journal of Economics*, Vol. 108, No. 1, February 1993, pp. 33-59.

Lazerson, Martin. "Review of 'A Study of High Schools'," *Harvard Educational Review*, Vol. 56, No. 1, February 1986, pp. 37-48.

Lynch, Lisa. "Private-Sector Training and the Earnings of Young Workers," *American Economic Review*, Vol. 82, No. 1, March 1992, pp. 299-312.

Maddala, G. *Limited-Dependent and Qualitative Variables in Econometrics* (Cambridge: Cambridge University Press, 1983).

Meyer, Robert and Wise, David. "High School Preparation and Early Labor Force Experience," in R. Freeman and D. Wise (eds.) *The Youth Labor Market Problem: Its Nature, Causes, and Problems* (Chicago: The University of Chicago Press, 1982).

Murnane, Richard; Willett, John; and Levy, Frank. "The Growing Importance of Cognitive Skills in Wage Determination," *The Review of Economics and Statistics*, Vol. 77, No. 2, May 1995, pp. 251-266.

Owen, John. *Why Our Kids Don't Study: An Economist's Perspective* (Baltimore: Johns Hopkins University Press, 1995).

Oxley, Diana. "Organizing Schools into Smaller Units: Alternatives to Homogeneous Grouping," *Phi Delta Kappan*, Vol. 75, No. 7, March 1994, pp. 521-526

BEST COPY AVAILABLE

Powell, Arthur; Farrar, Eleanor; and Cohen, David. *The Shopping Mall High School: Winners and Losers in the Educational Marketplace* (Boston: Houghton Mifflin, 1985).

Rosenbaum, James and Kariya, Takehiko. "Do School Achievements Affect the Early Jobs of High School Graduates in the United States and Japan?" *Sociology of Education*, Vol. 64, No. 1, April 1991, pp. 78-95.

Ruhm, Christopher. "High School Employment: Consumption or Investment?" Working Paper, Department of Economics, University of North Carolina Greensboro, Greensboro, NC, 1994.

Sander, William and Krautmann, Anthony. "Catholic Schools, Dropout Rates and Educational Attainment," *Economic Inquiry*, Vol. 33, No. 1, April 1995, pp. 217-233.

Sebring, Penny et al. *High School and Beyond, 1980 Sophomore Cohort, Third Follow-Up Data File User's Manual* (Washington, DC: Department of Education, National Center for Educational Statistics, 1987).

Sizer, Theodore. *Horace's Compromise: The Dilemma of the American High School* (Boston: Houghton Mifflin, 1985).

William T. Grant Foundation Commission on Youth and America's Future. *The Forgotten Half: Pathways to Success for America's Youth and Young Families* (Washington, DC: The William T. Grant Foundation, 1988).

TABLE 1

Distribution of Hourly Wages for Noncollege Youth: 1984

Wage Range[a]	Number	Percentage
$1.00 - 1.99	94	2.8
2.00 - 2.99	203	6.0
3.00 - 3.99	1,063	31.6
4.00 - 4.99	869	25.9
5.00 - 5.99	501	14.9
6.00 - 6.99	284	8.5
7.00 - 7.99	144	4.3
8.00 - 8.99	82	2.4
9.00 - 9.99	49	1.5
10.00 - 11.99	31	0.9
12.00 - 15.00	39	1.2
	3,359	100.0

[a] Cases with wage rates less than $1.00 or more than $15.00 per hour excluded.

BEST COPY AVAILABLE

TABLE 2

Weighted OLS Regression Estimates of the Effect of Nonschool and School Variables on the Hourly Wage of Noncollege Youth: 1984[a]

Nonschool Variables	All Youth	Males	Females
FULLTIMEWORK	.346 (3.92)***	.468 (3.18)***	.310 (3.09)***
AFTSCHOOLWORK	.009 (2.77)***	.008 (1.82)*	.007 (1.58)
WORKHISTORY	.006 (5.00)***	.008 (4.18)***	.003 (2.48)***
TRAINPROG	.691 (5.39)***	.783 (4.34)***	.512 (2.79)***
CERTIFICATES	--------	--------	--------
SES	.025 (4.59)***	.034 (4.13)***	.022 (3.45)***
MARRIED	NA	.739 (3.96)***	--------
MARRIEDFEM	-.526 (4.41)***	NA	NA
MARRIEDMALE	.703 (4.62)***	NA	NA
UNMARRIEDFEM	-.587 (7.76)***	NA	NA
CHILD	-.183 (2.08)**	-.255 (1.71)*	--------
BLACK	--------	--------	.195 (1.47)
HISPANIC	--------	--------	--------
ASIAN	--------	-.883 (1.60)	--------
NATIVEAMER	--------	--------	--------
OVERWEIGHT	--------	--------	--------
UNATTRACTIVE	--------	--------	--------
LOCUSCONTROL	-.001 (2.62)***	-.002 (2.25)**	-.001 (0.98)
SELFCONCEPT	--------	--------	--------
WORKORIENT	--------	--------	--------
HANDICAP	-.224 (1.98)**	--------	-.472 (3.36)***
LAWTROUBLE	--------	--------	--------
UNEMPLOYRATE	-.034 (3.63)***	-.055 (3.77)***	--------
MANUFWAGE	.054 (2.14)***	.082 (2.15)**	--------
NEWENGLAND	--------	--------	--------
MIDATLANTIC	-.377 (3.64)***	-.392 (2.49)***	-.291 (2.40)**
SOUTHATLANTIC	-.497 (5.09)***	-.562 (3.91)***	-.474 (3.93)***
ENCENTRAL	-.629 (5.91)***	-.747 (4.68)***	-.316 (2.87)***
ESCENTRAL	-.418 (2.94)***	--------	-.487 (2.87)***
WNCENTRAL	-.714 (5.63)***	-.562 (2.78)***	-.534 (3.62)***
WSCENTRAL	--------	--------	--------
MOUNTAIN	-.579 (3.84)***	-.622 (2.48)***	-.467 (2.75)***
RURAL	--------	--------	--------
URBAN	--------	--------	--------

BEST COPY AVAILABLE

TABLE 2 (continued)

	All Youth	Male	Female
School Variables			
GRADES	--------	--------	--------
ENGLISHTEST	-.010 (1.96)*	-.008 (1.13)	--------
MATHTEST	.015 (2.25)**	.028 (2.68)***	--------
SCIENCETEST	.027 (2.11)**	--------	--------
CIVICSTEST	--------	--------	--------
COMPUTERUSE	--------	--------	--------
GENERAL	.115 (1.66)*	--------	--------
VOCATIONAL	--------	--------	.072 (0.91)
DIPLOMA	--------	--------	--------
ABSENTLATE	.009 (2.29)**	--------	.014 (3.23)***
SUSPENDED	--------	--------	--------
UNPREPARED	--------	--------	--------
HOMEWORKHRS	.032 (2.63)***	--------	.043 (3.27)***
LEADERSHIP	--------	--------	--------
ATHLETICS	.142 (2.20) **	.245 (2.42)**	--------
OTHERACTIVITIES	--------	--------	--------
CATHOLIC	.337 (2.14)**	--------	.522 (2.99)***
OTHERPRIVATE	--------	--------	--------
COLLEGEPERCENT	--------	--------	--------
DROPOUTPERCENT	--------	--------	--------
SIZE	--------	--------	.365 (2.28)**
SIZESQUARED	--------	--------	-.078 (1.55)
Summary Statistics			
Constant term	4.11 (15.88)***	4.03 (10.33)***	3.60 (20.1)***
Sample size	3359	1690	1669
R^2	.13	.11	.08

a Figures in parentheses are absolute t ratios.
* significant at the .10 level
** significant at the .05 level
*** significant at the .01 level

BEST COPY AVAILABLE

Data Appendix

Stephen Joyce*

Introduction

All variables used in the study are based on data from the first four High School and Beyond (HS&B) surveys. In most cases variables describing school characteristics and experiences come from the base year and first follow-up surveys. School variables for dropouts are derived exclusively from the base year survey. The majority of employment and wage variables for both dropouts and graduates are derived from second follow-up data. Some study variables are taken directly from HS&B; most, however, are transformations or combinations of HS&B variables.

Most HS&B variables have missing responses. The incidence varies somewhat from question to question, but usually is between 3% and 7% of the eligible cases. Except for the dependent variable, our general approach to the problem created by missing responses was to estimate missing values rather than delete cases. Usually this entailed replacing missing response with information from a comparable question on another survey. When such information was not available, we made a "best guess" as to the probable magnitude of the missing response. Typically, this meant assigning a mean, median, or modal value from the original survey. In the end, no cases were thrown out because of missing values among the independent variables. For our treatment of the dependent variable, see the next section.

The specific variables used in the estimation are described in what follows. The length of the discussion for each variable represents a compromise between our desire to be comprehensive and the need to keep the Appendix to a reasonable length. Every effort has been made to provide an accurate account of our data management procedures, but invariably some details are omitted. If further information is needed, please contact one of the authors. Throughout the Appendix, variable names are in capital letters. Study variable names are in bold print and HS&B names are in standard print.

Dependent Variable

The dependent variable in the analysis is the hourly wage at the time of the second follow-up. This variable is computed from the respondents' answers to a series of questions describing jobs held between the first and second follow-ups (SY45-SY50). The questions covered up to four jobs and solicited information about compensation, hours of work, occupation, industry, and period of employment.

As noted in the text, a wage was computed only for the respondents who were working for pay at the moment of observation. Most of these individuals held only one job, but approximately 7% held two or more. For each job, HS&B provides starting compensation, current compensation, compensation time period for both (hour, week, two weeks, month, or year), and average hours worked per week. For jobs where current compensation and time period are reported, the hourly wage was computed by dividing compensation by the number of work hours in that period. For example, the hourly wage for a job with monthly compensation was obtained by dividing compensation by hours worked per month (= weekly hours times 52/12). For jobs where current compensation or time period are missing, starting values were substituted if available. (Only a small number of jobs fell into this category.) Jobs with unreported weekly hours were dropped from the analysis except for those where the compensation time period was the hour. In cases where the respondent held more than one job the wage was computed as a weighted average of the wages for the individual jobs with weights equal to each job's share of total weekly work hours.

Independent Variables

Independent variables are discussed in alphabetical order within four broad categories: school variables, work experience and training variables, control variables, and local labor market condition variables. Additional information about certain HS&B index variables (BYSES, FYLOCUS, etc.) is contained in Sebring et al. (1987).

* **Department of Economics and Center for Research in Human Development and Education, Temple University, Philadelphia, PA 19122**

BEST COPY AVAILABLE

Control Variables

ASIAN *Asian*
Dummy variable = 1 if respondent is Asian, 0 otherwise (RACE2).

BLACK *Black*
Dummy variable = 1 if respondent is Black, 0 otherwise (RACE2).

CHILD *Number of Children*
Number of children at time of second follow-up (SY65) Missing cases assigned the value 0 .

HANDICAP *Physical Handicap*
Dummy variable = 1 if respondent believes he has a physical handicap that limits his employability. 0 otherwise (FY104). Missing cases assigned base year response if available (BB088), otherwise assigned the value 0.

HISPANIC *Hispanic*
Dummy variable = 1 if respondent is Hispanic, 0 otherwise (RACE2).

LAWTROUBLE *Trouble with the Law*
Dummy variable = 1 if student reported having been in serious trouble with the law, 0 otherwise (BB061A). Missing cases assigned the value 0.

LOCUSCONTROL *Locus of Control*
HS&B index based on respondents answer to 4 questions measuring sence of personal efficacy. (FYLOCUS) Missing cases assigned the mean.

MARRIED *Married*
Dummy variable = 1 if respondent is married, 0 otherwise. Missing cases assigned the value 0 (SY56).

MARRIEDFEM *Married Female*
Dummy variable = 1 if respondent is female and married, 0 otherwise (SEX, SY56).

MARRIEDMALE *Married Male*
Dummy variable = 1 if respondent is male and married, 0 otherwise (SEX, SY56).

NATIVEAMER *Native American*
Dummy variable = 1 if respondent is Native American, 0 otherwise (RACE2).

OVERWEIGHT *Overweight*
Dummy variable = 1 if respondent believes himself to be overweight, 0 otherwise (BB061B). Missing cases assigned the value 0.

SELFCONCEPT *Self Concept*
HS&B index based on respondents answer to 4 questions measuring feeling of self-worth. (FYSELF) Missing cases assigned the mean.

SES *Socioeconomic Status*
HS&B index measuring the socioeconomic status of respondent in 10th grade (BYSES). Based on father's occupation and education, mother's education, family income, and material possessions. Missing cases assigned first follow-up value (FYSES), if available. Otherwise assigned base year mean.

UNATTRACTIVE *Physically Unattractive*
Dummy variable = 1 if respondent believes others find him physically unattractive, 0 otherwise (BB061C). Missing cases assigned the value 0

UNMARRIEDFEM *Unmarried Female*
Dummy variable = 1 If respondent is female and unmarried, 0 otherwise (SEX), (SY56)

UNMARRIED-MALE *Unmarried Male*
Dummy variable = 1 If respondent is male and unmarried, 0 otherwise (SEX), (SY56).

WORKORIENT *Work Orientation*
HS&B index based on respondents answer to 3 questions measuring work attitudes. (FYWORKOR) Missing cases assigned the mean.

Local Labor Market Variables

ENCENTRAL *East North Central Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise(HSDIV)

ESCENTRAL *East South Central Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise (HSDIV).

MIDATLANTIC *Middle Atlantic Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise (HSDIV).

MOUNTAIN *Mountain Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise (HSDIV).

MANUFWAGE *Mean Manufacturing Wage*
Mean manufacturing wage in 1982 for the SMSA where high school is located. For rural high schools, the mean wage of the nearest SMSA was used.

NEWENGLAND *New England Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise (HSDIV).

PACIFIC *Pacific Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise (HSDIV).

RURAL *Rural Location*
Dummy variable = 1 if high school is located outside a metropolitan area. 0 otherwise (SCHURB)

SOUTHATLANTIC *South Atlantic Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise (HSDIV).

SUBURBAN *Suburban Location*
Dummy variable = 1 if high school is in the suburban ring of an SMSA area, 0 otherwise. (SCHURB)

UNEMPLOYRATE *County Unemployment Rate*
Unemployment rate in 1982 for the county where high school is located.

URBAN *Urban Location*
Dummy variable = 1 if high school is in the central city of an SMSA, 0 otherwise. (SCHURB)

WNCENTRAL *West North Central Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise (HSDIV).

WSCENTRAL *West South Central Census Division*
Dummy variable = 1 if high school is in census division, 0 otherwise (HSDIV).

BEST COPY AVAILABLE

School Variables

ABSENTLATE *Days Absent or Late*
Number of days absent or late in the fall semester of 10th grade. Created by assigning midpoint values to the HS&B categories for days absent (BB016) and days late (BB017) and adding them together. Missing cases assigned the median values.

ACADEMIC *Academic Track*
Dummy variable = 1 if high school program is academic, 0 otherwise (HSPROG).

ATHLETICS *Participated in Athletics*
Dummy variable = 1 if respondent participated in athletics, 0 otherwise (BB032B). Missing cases assigned the value 0.

CATHOLIC *Catholic High School*
Dummy variable = 1 if high school is Catholic, 0 otherwise (HSTYPE).

COLLEGE-PERCENT *Percentage of School Graduates Attending College*
Percentage of 1979 graduating class enrolled in college in 1980 (SB011). Missing cases assigned follow-up response (FS2) if available. Otherwise assigned base year mean value.

COMPUTERUSE *Used Computer For Educational Purposes*
Dummy variable = 1, if respondent used computers in schools, 0 otherwise (SY8B3, SY8C3, SY8D3, SY8E3, SY8I3). Missing cases assigned the value 0.

CIVICSTEST *Civics Test Score*
Number of correct answers on HS&B 12th grade civics exam (FYCIVCRT). Missing cases assigned 10th grade scores (YBCIVRT), if available. Otherwise assigned base year mean value.

DIPLOMA *High School Diploma*
Dummy variable = 1 if student received high school diploma or equivalent by second follow-up, 0 otherwise (SY12). Missing cases assigned the value 0.

DROPOUT-PERCENT *School Dropout Percentage*
Percentage of students in class from 1983 who entered the 10th grade and left prior to graduating (FS6A). Missing cases assigned base year response if available (SB014), then given mean first followup value.

ENGLISHTEST *English Group Test Score*
Combined number of correct answers on HS&B 12th grade vocabulary (FYVOCBRT), reading (FYREADRT), and writing (FYWRITRT) exams. Missing cases assigned base year scores (YBVOCBRT, YBREADRT, YBWRITRT) if available. Otherwise assigned mean value of summed base year scores.

GENERAL *General Track*
Dummy variable = 1 if high school program is general, 0 otherwise (HSPROG).

GRADES *High School Grades*
Average grades received in high school. Created by assigning midpoint values to the HS&B categories for high school grades (HSGRADES). Missing cases assigned a score of 72.

HOMEWORKHRS *Time Spent on Homework*
Hours spent on homework weekly. Created by assigning midpoint values to the HS&B categories for homework hours (BB015). Missing cases assigned the value 0.

MATHTEST *Math Test Score*
Combined number of correct answers on HS&B 12th grade math exams (FYMTHIRT, FYMTH2RT). Missing cases assigned base year scores (YBMTHIRT, YBMTH2RT) if available. Otherwise assigned mean value of summed base year scores.

OTHER-ACTIVITIES *Number of Activities*
Number of activities other than athletics in 10th grade. Created by adding dummy variables for activities indicating participation in individual activities (BB032C-BB032L). Missing cases assinged the value 0.

OTHERPRIVATE *Private High School*
Dummy variable = 1 if high school is private and not Catholic, 0 otherwise (HSTYPE).

PUBLIC *Public High School*
Dummy variable = 1 if high school is public, 0 otherwise (HSTYPE).

SCIENCETEST *Science Test Score*
Number of correct answers on HS&B 12th grade science exam (FYSCINRT). Missing cases assigned base yearade scores (YBSCINRT) if available. Otherwise assigned mean value of base year scores.

SIZE *High School Size(in 1000's)*
Number of students in high school (SB002A). Missing cases assigned value equal to 3.75 times number of students in 10th grade (SB002B) if available. Otherwise assigned mean value.

SIZESQUARED *High School Size Squared*

SUSPENDED *Suspended from High School*
Dummy variable = 1 if student suspended, 0 otherwise (FY66E). Missing cases assigned base year responses (BB059D) if available. Otherwise assigned the value 0.

VOCATIONAL *Vocational Track*
Dummy variable = 1 if high school program is vocational, 0 otherwise. (HSPROG)

UNPREPARED *Unprepared for Class*
Created by adding dummy variables indicating class attendence without books, homework, and writing materials (FY18A-FY18C). Missing cases assigned base year responses (YB016A-YB016C) if available. Otherwise assigned base year mean value.

Work Experience and Training Variables

AFTSCHOOL-WORK *Afterschool Work Hours*
Average hours worked per week during school. Created by assigning midpoint values to HS&B categories for number of hours worked in 10th (BB022) and 12th grade (FY25), and averaging the two. Missing cases assigned the mode.

CERTIFICATES *Certificates and Licenses*
Number of certificates and licenses earned. Created by assigning a value of 1 for each employment relavent certificate or licenses (SY41FC, SY41SC, SY41FL, SY42SL). Missing cases assigned the value 0.

FULLTIMEWORK *Held Full-Time Job*
Dummy variable = 1 if respondent ever held a full-time job between leaving high school and second follow-up (SY50), 0 otherwise. Missing cases assigned the value 0.

TRAINPROG *Training Program*
Dummy variable = 1 if respondent participated in a job training program between leaving high school and the second follow-up (SY39), 0 otherwise. Missing cases assumed no job training program.

WORKHISTORY *Work History*
Index of work history from October 1982 through February 1984 based on 4 HS&B employment status variables (JOBSOC82, JOBSFE83, JOBSOC83, JOBSFE84). Created by assigning a score of 100 for full-time employment, 40 for part-time and 0 for not employed in each case , then summing over four periods. Missing cases assigned the value 0.

BEST COPY AVAILABLE

THE NATIONAL CENTER ON EDUCATION IN THE INNER CITIES

The National Center on Education in the Inner Cities (CEIC) was established on November 1, 1990 by the Temple University Center for Research in Human Development and Education (CRHDE) in collaboration with the University of Illinois at Chicago and the University of Houston. CEIC is guided by a mission to conduct a program of research and development that seeks to improve the capacity for education in the inner cities.

A major premise of the work of CEIC is that the challenges facing today's children, youth, and families stem from a variety of political and health pressures; their solutions are by nature complex and require long-term programs of study that apply knowledge and expertise from many disciplines and professions. While not forgetting for a moment the risks, complexity, and history of the urban plight, CEIC aims to build on the resilience and "positives" of inner-city life in a program of research and development that takes bold steps to address the question, "What conditions are required to cause massive improvements in the learning and achievement of children and youth in this nation's inner cities?" This question provides the framework for the intersection of various CEIC projects/studies into a coherent program of research and development.

Grounded in theory, research, and practical know-how, the interdisciplinary teams of CEIC researchers engage in studies of exemplary practices as well as primary research that includes longitudinal studies and field-based experiments. CEIC is organized into four programs: three research and development programs and a program for dissemination and utilization. The first research and development program focuses on the *family* as an agent in the education process; the second concentrates on the *school* and factors that foster student resilience and learning success; the third addresses the *community* and its relevance to improving educational outcomes in inner cities. The focus of the *dissemination and utilization* program is not only to ensure that CEIC's findings are known, but also to create a crucible in which the Center's work is shaped by feedback from the field to maximize its usefulness in promoting the educational success of inner-city children, youth, and families.

CEIC Senior Associates

Margaret C. Wang
Director, CEIC and CRHDE
Professor of Educational Psychology
Temple University

Aquiles Iglesias, Associate Director, CEIC
Associate Professor and Chair,
Speech-Language-Hearing
Temple University

Lascelles Anderson
Professor and Director,
Center for Urban
Educational Research and
Development
University of Illinois
at Chicago

David Bartelt
Associate Professor of
Geography and Urban
Studies and Director,
Institute for Public
Policy Studies
Temple University

William Boyd
Professor of Education
Pennsylvania State
University

Gayle Dakof
Visiting Assistant
Professor of
Counseling Psychology
Temple University

H. Jerome Freiberg
Professor of Curriculum
and Instruction
University of Houston

Michael Goetz
Associate Professor
of Economics
Temple University

Geneva Haertel
Senior Research Associate
CRHDE
Temple University

Howard Liddle
Professor of Counseling
Psychology
Temple University

Maynard C. Reynolds
Professor Emeritus of
Educational Psychology
University of Minnesota

Leo Rigsby
Associate Professor
of Sociology
Temple University

Judith Stull
Associate Professor of
Sociology
La Salle University

William Stull
Professor and Chair,
Department of Economics
Temple University

Ronald Taylor
Associate Professor of
Psychology
Temple University

Herbert J. Walberg
Research Professor
of Education
University of Illinois
at Chicago

Hersholt C. Waxman
Associate Dean for
Research and Associate
Professor of Curriculum
and Instruction
University of Houston

Kenneth Wong
Associate Professor
Department of Education
and Social Sciences
University of Chicago

William Yancey
Professor of Sociology
Temple University

Andrea Zetlin
Associate Professor
Special Education
California State
University, Los Angeles

FOR MORE INFORMATION, CONTACT JESSE R. SHAFER, INFORMATION SERVICES COORDINATOR (215/204-3000)